Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

obtained what appeared to be three distinct crystallizations here—two of deep red crystals and one of brown plates. These were picked apart as they crystallized together, using a hand lens, and exercising great care, and were then submitted to recrystallizations until quite pure and distinct. On breaking up these picric acid compounds with dilute ammonia, we obtained at least two well-marked and distinctly different hydrocarbons. With regard to the hydrocarbon from the third set of crystals we are still in doubt.

Of the two hydrocarbons, one fuses constant at 280°C., and the other at 178°C. We are not able to identify them certainly with any of the known hydrocarbons.

Of both of these hydrocarbons, quinones have been made, and of one of them the alizarine, acting upon the quinone with strong sulphuric acid with heat, and then fusing the dried residue with solid potassium hydrate. The quinone dissolves in sulphuric acid with a dark purple color, and when the nearly black residue of di-sulphoquinonic acid and potassium hydrate are fused together, a dark yellowish-brown color is obtained. From the solution of this, hydrochloric acid precipitates the alizarine as a dark brown flocculent mass.

Several analyses of the quinone and of the alizarine were made. As I hold the whole subject still open to revision, I will not quote them, but merely say that both the quinone and the alizarine derived from the hydrocarbon, fusing at 280°C., indicate a probable composition C_{16} H_{14}. This would be a dimethyl-anthracene, yet the hydrocarbon does not agree with the dimethyl-anthracene discovered by Van Dorp, and studied by Wachendorf and Zincke.

With this brief mention of the work done, we will defer any further discussion until our results are sufficiently advanced to be presented as a whole. We are now engaged upon the work, and will push it promptly to a completion.

Character of some Sullivan County Coals. By Franklin Platt.

(*Read before the American Philosophical Society, February 7th*, 1879.)

It has already been noted in giving the detailed description of the coal openings in Sullivan county, that the different coals mined presented wide differences in character, and in one or two instances offered some most unusual features.*

These characteristics may be briefly summed thus :†

* See unpublished Report of Progress, Second Geological Survey of Pennsylvania, GG.

† See the analyses made by Mr. A. S. McCreath, Chemist of the Survey at Harrisburg, given below.

1. That the Bernice coal as mined from the Big Bed, called bed B, is a semi-anthracite coal, of the usual chemical composition of anthracites, but differing from them in appearance and fracture.

2. That the coal bed lying sixty feet below the coal bed B is a semi-bituminous coal, of curious structure; holding much water in combination; and not coking.

3. That in a coal bed opened only one and a half miles east of Bernice, the upper bench is semi-bituminous coal, and the lower bench an anthracite, or more nearly semi-anthracite; with only a six inch black slate parting between these two benches; the semi-bituminous coal bench not coking, and holding a very large percentage of water in combination.

4. That the Forksville coals are semi-anthracites of unusual appearance and structure.

5. That the Laporte coal is really bituminous coal, of very curious structure, holding much water in combination.

In order that the main features of the character of these coals may be more forcibly presented, they are grouped together thus :—

1. Bernice, Sullivan County. Run of mine. Bed B.
2. " " " Top bench. "
3. " " " Middle bench. "
4. " " " Lower " "
5. " " " Cannel-like coal in upper bench.
6. " " " Coal 60 feet below Bed B.
7. " " " " " " "
8. Pigeon Creek, 4 miles east of Bernice. Bed B.
9. 1½ miles east of Bernice. Top bench.
10. " " " Lower bench.
11. 3½ miles S. W. of Forksville. Lip. & Mercer mine. Top bench.
12. " " " " " Lower "
13. 1 mile south of Laporte. S. Hall's Coal.

	1	2	3	4	5	6
Water	1.295	1.840	1.800	2.220	1.950	5.815
Volatile Matter	8.100	9.835	9.650	9.405	9.030	15.085
Fixed Carbon	83.344	76.788	82.373	81.267	63.795	62.329
Sulphur	1.031	.647	.622	.618	.583	.474
Ash	6.230	10.890	5.555	6.490	24.640	16.297
	100.000	100.000	100.000	100.000	100.000	100.000
Color of Ash	Gray.	Cream.	Gray.	Cream.	Cream.	Reddish Gray.

	7	8	9	10	11	12	13
Water.....	4.130	2.340	7.930	2.910	.930	.810	6.830
Vol. Matter.	15.270	8.440	21.410	11.780	12.410	13.060	21.930
Fixed Carb.	67.362	80.949	54.099	81.672	75.611	71.679	55.413
Sulphur....	.523	.726	.551	.598	.574	.581	.387
Ash.....	12.715	7.545	16.010	3.040	10.475	13.870	15.440
	100.000	100.000	100.000	100.000	100.000	100.000	100.000
Color of Ash.	Reddish Gray.	Cream.	Cream.	Cream.	Gray.	Gray.	Red.

There is no peculiarity about the chemical composition of the coal from the Bernice Big Bed, or B. The analysis closely resembles that of the Lykens Valley coal; it is burned exactly like any of the other anthracites, and differs from them only in appearance and structure. For all purposes it is classed among the anthracite coals, and is sold for exactly the same purposes.

The coal sixty feet below Bed B introduces at once an interesting inquiry, from the fact that although a semi-bituminous coal it does not coke, and re-absorbs moisture rapidly on cooling after being heated to 225°.

In his report upon the analyses of coals from Ohio, Prof. Wormley has noted the characteristic feature of their re-absorbing moisture when allowed to coal after being heated to 212° F.

In his report on the analyses of the coals of Pennsylvania,* Mr. Andrew S. McCreath, the chemist of the survey, reports that the Pennsylvania coals have no such characteristics; and out of many hundreds of coals analyzed by him only four so far have possessed the power of re-absorbing moisture rapidly after it has been expelled at 225° F.†

Under such circumstances it is desirable to note particularly the appearance, behavior and composition of these peculiar coals.

Three of them are from Sullivan county, and one from the New Red Sandstone in York county.

No. 1. B. Gross coal, from York county, Pennsylvania, on B. Gross farm, on Liverpool road, three-fourths of a mile north of Liverpool, on the Little Conewago creek. Specimen collected by P. Frazer, Jr. The coal is from the Mesozoic rocks.

"The coal has generally a deep black color, with somewhat pitchy appearance. It is very brittle, breaking with *conchoidal fracture.*

Water at 225°.....	4.310
Volatile Hydrocarbons.....	18.482
Fixed Carbon.....	74.358
Sulphur.....	.528
Ash.....	2.322
	100.000

* Report of Progress in the Laboratory of the Survey, M. p. 28, 1875.

† MSS. Report of Progress MM. 1878, now in press.

"The coal yields a bulky ash of a reddish brown color. It has not the slightest tendency to form a coherent coke, and yields volatile matters burning with a non-luminous flame. The water was estimated at 225°, and upon withdrawal of the heat the coal begins to absorb water with great avidity. So that in two hours it has re-absorbed sixty-three per cent. of the amount of water originally present."

Throwing out the water, sulphur and ash, the proportion stands:

Fixed Carbon	80.093
Volatile Hydrocarbons	19.907
	100.000

Volatile Hydrocarbons to Fixed Carbon, as 1 to 4.023.

No. 2. Coal sixty feet below bottom of Bed B, at Bernice, Sullivan county, Pennsylvania.

The coal is for the most part coated with iron oxide and infiltrated silt. It has a dull dead lustre, and is compact and brittle, with very irregular fracture. The coal does not have the slightest tendency to coke and yields gases which burn with a *very* feebly luminous flame. After cooling (water estimation) the coal immediately begins to absorb water and in two hours has re-absorbed about sixty per cent. of the water originally present.

Water	5.815
Volatile Matter	15.085
Fixed Carbon	62.329
Sulphur	.474
Ash	16.297
Color of ash, reddish-grey.	
	100.000

Leaving out the accidental impurities, and counting only the ignitible constituents, the proportion stands:

Fixed Carbon	80.514
Volatile Hydrocarbons	19.486
	100.000

Volatile Matters to Fixed Carbon as 1 to 4.132.

It should be noted that this coal specimen was necessarily taken from near the outcrop, which accounts for the oxide of iron coating, the infiltrated silt, and in part for the high percentage of ash.

A second specimen of this same coal (sixty feet below bed B at Bernice) taken from under better cover, was also analyzed by Mr. McCreath.

"The coal does not coke, and the gases burn with a *very feebly* luminous flame. The coal, after being dried, begins to absorb water rapidly, and in two hours has re-absorbed sixty per cent. of the water originally present. This amount is not increased by longer exposure.

Water	4.130
Volatile Matter	15.270
Fixed Carbon	67.362
Sulphur	.523
Ash	12.715
Color of ash, reddish-gray.	
	100.000

On drying at 225° the Coal loses	4.13 %
" " 245° " "	same.
" " 260° " "	4.19 %
" " 340° " "	4.50 %
" " 460° " "	4.69 %
At a dull red heat the Coal loses	12.59 %

But in all these experiments the water re-absorbed is about the same; that is, the coal re-absorbs 2.48 parts of water. Irrespective, therefore, of the amount of water, &c., driven off by heat, the portion re-absorbed is practically constant; and this property is not destroyed, even after all the volatile matter is driven off."

No. 3. Coal from opening one and a half miles east of Bernice, Sullivan county, Pennsylvania. Top bench of coal.

"The coal has a dull dead lustre; it is very soft and crumbling, and has a somewhat shaly appearance with laminated structure. The gases burn with a feebly luminous flame, but the coal does not coke.

Water	7.930
Volatile Matter	21.410
Fixed Carbon	54.099
Sulphur	.551
Ash	16.010
Color of ash, cream.	
	100.000

No. 4. Sullivan county, one mile south of Laporte. From S. Hall's drift.

"The coal has a deep black dull lustre; it is rather friable; contains some slate. It does not show the slightest tendency to form a coherent coke; the volatile matter burns with a *feebly* luminous flame. The coal acts generally in the same way as that from the Bernice lower coal bed.

Water	6.830
Volatile Matter	21.930
Fixed Carbon	55.413
Sulphur	.387
Ash	15.440
Color of ash, red.	
	100.000

Throwing out the sulphur, water and ash, and counting the ignitible constituents only, these coals show the following proportions:

	Coal No. 3.	Coal No. 4.
Fixed Carbon	71.646	71.646
Volatile Hydrocarbons	28.354	28.354
	100.000	100.000

And the proportions of Volatile Matter and Fixed Carbon, are for No. 3, as 1 to 2.527; and for No. 4, as 1 to 2.527.

There are several points touching these coals which are noteworthy:

1. They range in proportion of Volatile Matters to Fixed Carbon from bituminous to semi-bituminous coals; these proportions being 1 to 4.022; 1 to 4.132; 1 to 2.527; 1 to 2.527.

2. They carry an unusual percentage of water; these percentages being 4.310; 5.815; 7.930; 6.830.

3. The gases driven off burn with a non-luminous flame.

4. None of the coals coke.

5. All of the four coals re-absorb in a short time fully 60 % of the water which has been expelled by raising their temperature to 225° F., in this respect differing from all the other Pennsylvania coals hitherto examined.

Notes upon the Collection of Coins and Medals now upon Exhibition at the Pennsylvania Museum and School of Industrial Art, Memorial Hall, Fairmount Park, Philadelphia.

By Henry Phillips, Jr, A. M.

(*Read before the American Philosophical Society, Feb.* 7, 1879.)

"*Quem non moveat clarissimis monumentis testata consignataque vetustas?*"
Spanheim.

The object of this display is to present Art as typified upon coins and medals. from the earliest known period until the present time, so as to show the student the nature and character of the development of æsthetic culture as exhibited by the aid of Numismatic science.

The change and advance presented by the inspection of coins and medals is a vast chain of ever closely joining links. From the very beginning of coinage, from the rudest of all ancient coins, the Persian daric or the tortoise of Ægina, to the majestic medallions of Syracuse, step by step every inch of the onward march of Art may readily be traced. The earliest of all known coins exhibit on the reverse only a shapeless punch mark, are the work of unskilled hands, are defective in type, in shape, in inscription, while the latest (or most modern), present complicated and intricate devices of all kinds and natures.